PRUSSIAN NEEDLE-GUN.

The Arm that Won the Prussian Victories.

DESCRIPTION OF THE GUN.

The Most Formidable Engine of Destruction in the World.

WHAT MAY BE DONE WITH IT.

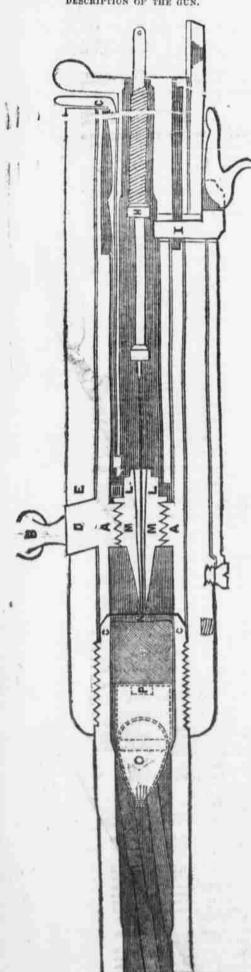
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The vast superiority of the Prussian needle sun during the late contest in Bohemia has caused, as already stated, extraordinary excitement in the military circles of France and England. Our latest despatches, published in Thursday's paper, state that arrangements have been perfected to arm the English troops with the breech-loading rifle; and there exists no doubt that ere long all the armies of Europe will be furnished with this weapon of defense, which has done such terrible execution in the battles of Munchengratz, Skalitz, Trautenau, and Sudowa. It was this needle-gun which enabled the Prussians to force the passage of 2he Podoll Bridge, which sanguinary conquest the London Times' correspondent describes in She following terms:-

"The Prussian riflemen'fired about three times before the Austrians, armed only with muzzle loading rifles, were able to reply. This more than compensated for any disadvantage in numbers or position. In the street the Austrian soldiers huddled together, and, incumbered with clumsy ramrods, were unable to load with ease, and could return no adequate fire to that of the Prussians, while these, from the advan-tage of a better arm, poured their quick volleys inte an almost defenseless crowd. At the rail way bridge, about two hundred yards distant, where a like struggle was going on simulta-neously, the needle-gun showed its advantage over the old-fashioned weapons of the Austrians, for the latter fell in the proportion of six to one

The results are considered so extraordinary that old military prejudices have entirely vanished before the proved excellence of this weapon, and the needle gun, it is believed, will create quite a revolution in European warfare. Daring the Crimean war, it will be remembered, a military commission, consisting of General McClellan, Major Mordecai, and Major Delafield, United States Army, visited the various European military establishments, and in their reports, subsequently submitted to Congress, we find frequent allusions to the needle-gun. From Major Mordecai's report, we extract the following description of this arm of defense, which is now attracting the attention of the estire civilized world:-

DESCRIPTION OF THE GUN.



Prussia had, in the meantime, applied herself with great secrecy to the improvement of her meantry arms; and though not unmindful of the systems heretofore, and which remain to be meticed, and actuated by the same motives which led to those, she instituted and periected | the part v. On the opposite side of the locket | packed too closely, or the spiral spring too weak.

a system totally different from any-the system | of breech-loading. The arm is known as the "Prussian needle-gun." As the mechanism of this arm is not so well known, it will not be out of place to enter into a somewhat detailed description of it.

The principle of the needle-gun, viz., to insert the charge at the breech, with a view to case and facility of loading, is by no means novel, it having been employed in the amusette of Marshal Saxe, the arms of Montalembert, of Robert, and of Letaucheux, as well as in the wall pieces of the French, and in the chamberloading gun of the Norwegians.

(There are in the Dresden gallery of small asms several of this sort, one of which surprisingly resembles the needle-gun in the method of closing the breech, with the difference that, in place of the chamber being drawn back to load, the barrel is advanced, and that the conical termination of the barrel engages over that of the chamber, both terminations being provided with the half turn of a screw. The charge lies in the fixed chamber, and is ignited by a match-lock. A lever attached to the barrel serves to turn and to move it back and forth.)

The inventor of the present Prussian needle gun is Mr. Dreyse, manufacturer of arms at Sommerda. As early as 1835 he sought to attain the advantage of ease and facility of loading by closing the breech with two screws behind each other, having a space between them. In this space there was a spiral spring, which carried a needle, working through the middle of the inner screw. A simple mechanism enabled this spring to be drawn back, and when let loose the penetration of the needle into the fulminate caused the ignition of the charge.

The cartridges with spherical balls used with this arm were at first inserted at the muzzle, and had a priming of fulminate at the bottom, which frequently exploded prematurely when rammed too hard, or when the needle projected beyond the inner screw. The windage, too, had to be increased to secure sufficient ease of loading. which prevented the ball from taking a sufficient hold on the sides of the bore.

These objections induced the projector to insert the cartridge at the breach, and was done in Norway, and hence the new Prussian needle-gun. In reference to the Norwegian breech-loading gun, it may be briefly remarked now, that the barrel is open at the rear, and there is a separate chamber for the charge, with a calibre somewhat larger than that of the barrel. The ball is cylindro-conical.

In the Prussian needle-gun the cartridge is inserted at the rear; the ignition is produced by the intrusion of a needle into the fulminate attached to the cartridge, and the closing of the open barrel is effected by the fitting of the front end of the chamber to the rear of the barrel.

The barrel, the rifled part of which is 36.06 inches long, has a calibre of 0.606 inches, with tour grooves, having a twist of five-elevenths in the length of the barrel, or an inclination of 88 degrees, 6 minutes, and 17 seconds. The breadth of these is 0.243 inches, and their depth 0.03 inches. The unrifled portion at the rear makes a kind of chamber, or bed of the cartridge, the diameter of which is 0.59 inches, or several hundredths greater than the bore, and the length nearly the same as that of the cartridge. The bed of the carriage enlarges slightly to the rear so as to admit the cartridge easily after repeated discharges; the enlargement must, however, be limited, otherwise it would interfere with the central position of the cartridge. Where the bed of the cartridge unites with the grooves and bands, which latter proect on account of the smaller calibre of the bore, there is a gradual slope to prevent too sueden a compression of the ball into the bore, and to facilitate its passage. To the same end there is a slight enlargement of the lower part of the bore for the distance of 6:17 inches. The rear of the barrel terminates externally conically,

Over these parts the cylinder, with its six-sided head, is screwed. This is cut out to such a length and breadth on its right side as to admit of easy entrance to the cartridge, whilst to the rear the cut is continued in a zigzag, so that the hind part lies exactly in the middle. Upon the right upper side of the cylinder, at the edge of the broad cut, a reinforce is left sloping towards the head, called the stoll-bed, and serves as a point d'appui for the stoll or stap of the chamber, hereafter to be described. The end projecting at E forms the tang by which the cylinder is fastened to [the stock, by means of a screw passing through the trigger-plate. To the same end there is over the trigger-plate a second screw, the thread of which enters the barrel. And, finally, there is the trigger-hole in the underside of the cylinder. The object of the cylinder is to hold all the other mechanism of the piece.

and is called the mouth-piece of the barrel.

The chamber which lies next to the cylinder is reamed out conically at its front end, and thence cylindrically to the depth of 1:38 inch and 0.92 inch in diameter. The part reamed out conically is called the chamber mouth-piece, and fits against the rear end of the barrel, with the offset at the top of the cylindrical part, or air-chamber. The air-chamber has the needle-pipe screwed into its breech, which is 0.46 inch thick. The needle-pipe is conical as far as it projects into the air-chamber, and the screw-thread is 0.46 inch long, terminated by a washer; below the washer there is the sixsided prism and a short cylinder. The stop on the outside of the chamber is like the airchamber breech, of one piece with the chamber, and has the breadth of the zig-zag of the cylinder. The object of the stop is to rest against the stoil-bed, which it is filed to fit, when the chamber is shoved in against the bore and turned to the right. The handle is screwed into the stop for the more convenient service of the chamber. The space behind the breech of the air-chamber serves to receive the locket, to which end the inner rear parts are channelled out. On the under side of the chamber, and in the rear of the air-chamber breech, is the slot of the trigger, and on the upper side is the recess for the nese of the locket.

As already intimated, the locket is inserted in the empty space to the rear of the air-chamber, and contains the needle socket with its needle and spiral spring. It is bored out cylindrically from above to within 1.8 inch of the end, where the part which has the spiral spring is somewhat narrower. The bottom, 0.18 inch thick, is pierced with the hole for the bolt. On the outer upper side of the locket is the recess and the stop for the mainspring, which is held there by

the straight slot for the trigger. The handle projecting behind serves partly for the better detaching of the locket, partly as a support for the mainspring, which is filed at its front end so as to fit in the recess on the inside of the locket, whilst on the under side it has a projecting tooth. The upper rear parts of the spring are furnished with offsets which run in the grooves of the chamber. The part z is called the nose, and serves to disengage it from the rear offset of the chamber. The needle stem is placed with the spiral spring on the inside of the locket, is cylindrical, and has two offsets of the diameter of the locket. The forward offset touches the tooth of the mainspring, which projects inwards; is reamed out on its front face, and, as it strikes the end of the needle pipe with force, is covered with gum or caoutchouc. The other middle offset serves as well for a support to the spiral spring as for a trigger in the setting of the locket. The spiral spring bears a weight of ten and a quarter to eleven and a quarter pounds. The needlesocket is bored through its length to receive the needle, which is divided into the needle and its stem. The latter is of brass, and has screw threads cut on the end to screw it into the bolt. The needle is soldered into it to the depth of 0.46 inch.

The trigger spring, with its stop and trigger, is on the under side of the cylinder. The first is several inches long; is fastened at one end by a screw to the cylinder, and has at the other end, on the side next to the cylinder, an upright stop, which reaches through the cylinder, the chamber, and the locket, to the offset of the needle bolt. The projection is filed to receive the trigger.

The trigger itself is a bow-shaped, irregular lever, the short arm of which extends in the direction of the spring prolonged. By the pressure of the short arm against the cylinder the stop is drawn down, and releases the offset of the needle-holt.

The gun is loaded in this way: After it has been brought to a nearly horizontal position, with the butt on the right hip. and the left hand at the lower band, the chamber drawn back from the mouth-piece of the barrel, the cartridge is inserted through the right opening in the cylinder into its place, the chamber (A), again brought up to the mouth-piece (c) by means of the handle (D), and turned to the right. The cylinder is thus made to rest with the stop (D) against the oblique stoll-bed (E). The chamber being shoved up engages over the mouth-piece of the barrel, and the turn to the right against the sloping face of the stoll-bed

The locket, which has projected some what to the rear, is now shoved up into the chamber, by which the notch of the main-spring engages the catch (G) at the inner rear ent of the chamber: at the same time the middle offset of the needlebolt is pressed against the trigger-stop, thus compressing the spiral spring, while the locket is prevented from returning by the catch of the main-spring just referred to.

screws it up tight to its place.

It is to be observed here that in turning the chambers to the right the hitherto corresponding slots of the trigger-stop are shoved sideways, and the stop enter- the cross-cut (F).

Let now the triggerstop be drawn by pressing on the trigger so as to clear the offset of the needle-bolt. The bolt will dart forward from the effect of the spring, and will strike the square end of the needle-pipe, which projects sufficiently to pass through the powder (o) of the charge, and inflame the fulminate (P).

The arm being loaded, to uncock it the locket must be drawn back, pressing on the main. spring.

At the time of the adoption of this new me chanism the cartridge was wholly altered, the salot being enlarged and placed between the rowder and the ball-a half-round cavity being made on the upper side for the ball, and a recess in the under side for the fulminate.

The ball is sphero conical. The bare is a hemisphere, 0.514 inch diameter, upon which is placed a cylinder 0.154 inch high and 0.639 inch diameter, terminated by a right cone 0.584 inch high, with its sides slightly curved. The weight of the ball is 450 grams. The paper sabot is made in this way:- The paper intended for it is cut into strips somewhat broader than the pattern for the sabot requires. A strip is then broken into a long and short part, which are wound on a machine and the ends pasted. The roll being completed and dry, it is pressed between two dies to give it the requisite shape, by which, now called a sabot, it receives at the top and bottom recesses for the ball and the priming, which last is put in afterwards with considerable pressure. The bed of the ball has besides several incisions.

The paper for the cartridge, of a light quality and easily consumed, which is 2.67 inches long and 2.26 inches broad, is wrapped but once around an iron former, slightly tapering, being 0.638 inch above and 0.708 inch below. The lap is pasted and a peculiar and simple bottom made. The completion of the cartridge is not difficult, and is as tollows:-The cartridge having been filled and the powder slightly shaken down, the paper sabot is inserted with the priming of fulminate on the powder, the ball piaced in the cavity prepared for it, and the cylinder gathered over the ball, but so as to show the point of it. It is dipped, as far as the ball goes, in tallow. The charge of powder is 56 grains. The we ght of a Prussian needle gun is 10.27 pounds to 11.3 pounds.

The advantages of this arm are:-

First. The simplicity of the mechanism, which can be taken apart without screw driver, springvice, etc.

Second. It can be safely and easily cleaned, Third. The convenience and rapidity of loading in every position, especially in the contracted space of loop-holed walls and on horseback.

Fourth. The ce: tain and uniform filling of the grooves, since the ball has a diameter greater than the callibre.

Fifth. The reduced charge consequent on the entire consumption of the powder. Sixth. The disuse of the rammer as such.

On the other hand the needle-gun has its defects, among which the following are prominent:-

First. A waste of ammunition from the ease and rapidity of loading, which can only be guarded against by putting it in the hands of good and experienced marksmen, who know the value of a good and well-timed shot. Second. Weakening of the spiral spring from

Third. A possibility that the needle may not

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